SUMMARY AND CONCLUSION

An investigation was carried out on the sandy loam soil at the experimental farm of Agricultural Botany Department, Gauhati University, Assam, during the Rabi seasons, 1969-70, 1970-71, 1971-72 and 1972-73. The idea of the investigation was to find out the suitable dwarf wheat variety, which in a suitable sowing date and under suitable fertility level could produce profitably maximum yield. For the purpose, dwarf wheat varieties 'Kalyan Sona', 'Sonalika', 'Snarbati Sonora', and 'Safed Lerma' were tried with four dates of sowing - 31st October, 15th November, 30th November and 15th December. Among the varieties 'Kalyan Sona' sown on 15th November excelled.

Thereafter macronutrients Nitrogen as Ammonium Sulphate, Phosphorus as single Super Phosphate, Potash as Muriate of Potash, and Calcium as Lime to see how it fairs on acid soil, each individually at 40, 80, 120 and 160 kg/ha levels were tried on the variety 'Kalyan Sona'. Moreover, micronutrients - Zinc as Zinc Sulphate and Boron as Borax at the rate of 10, 20, and 30 kg/ha, and Molybdenum as Sodium Molybdate at the rate of 50, 100 and 150 gm/ha were tried on the variety 'Kalyan Sona'. To make doubly sure about the optimum sowing time effects of two dates of sowing - November 15 and December 15 - were studied along with the micronutrients. Ultimately, selected combinations
of N, P, K (120 kg/ha, 80 kg/ha, 80 kg/ha) and Zn (20 kg/ha) which were found to be the best doses indicating maximum yield of grain were tried with the variety 'Kalyan Sona' for two consecutive years. The investigation was laid out in randomised block design with three replications.

The study of performance of crop in different treatments and their evaluations were made on the basis of plant height, number of tillers, number of leaves, ear emergence and maturity, number of ears, length of earhead, number of grain per ear as well as per plant, weight of grain per plant, 1000-grain weight, yield of grain and straw, dry weight of roots and protein content of grain in percentage. Correlation and path analysis studies were also made between the yield attributing factors and yield of grain. Economics of cultivation was also calculated.

The results obtained are summarised below in brief.

Among the varieties 'Kalyan Sona' recorded the highest yield of grain (36.95 qtl/ha) and crop sown by November 15 exhibited the best performance. Yield of grain and straw increased progressively with the increase of Nitrogen doses resulting maximal effect (45.16 qtl/ha) at 120 Kg N/ha. Further increase in dose reduced the yield. Amongst the different levels of Phosphorus 80 kg/ha treatment produced maximum yield (25.56 qtl/ha). While Potash at 40 kg/ha level indicated higher yields (24.10 qtl/ha) than the other Potash treatments. On the other hand the effect of Calcium as lime was not significant. A comparative study further indicated that the effect of Nitrogen was vigorous while the effects of Phosphorus and Potash were comparatively poor.
The effect of Zinc, Boron and Molybdenum at different levels, under two dates of sowing, led to conclude that November 15 was the best date of sowing. Among the micronutrients, Zinc at 20 kg/ha level showed significant effect in respect of yield (32.33 qtl/ha) and the overall effect of Zinc was superior to Boron and Molybdenum.

Amongst the various selected combinations, NPK treatment irrespective of Zinc proved best in both vegetative and reproductive characters including dry weight of root and protein content of grain in percentage. Moreover, the application of NPK level was found highly profitable. In both the years, NPK was followed by NK and NP in effects. While PK could not produce beneficial effects neither in vegetative nor reproductive characters but test weight of grain in both the years. Thus, the effect of Nitrogen in combination with P or K, or PK was significant and was found profitable. Zinc (20 kg/ha) along with NPK and NP showed an increasing trend in respect of yield over NPK and NP without Zinc respectively in both the years. However, the difference in yield was not significant.

Among the various characters studied, height of plant, number of tillers, number of ears, ear length, number of grains, 1000-grain weight, and weight of grain per plant, had correlation with the grain yield. The weight of grains, number of ears, number of grains, and length of ears had significant direct correlation with the grain yield. It was noticed that in the year 1971-72 the grain yield of variety 'Kalyan Sona' could be predicted jointly by weight of grain, number of grain, and number of ear per plant with prediction power of 98.7 p.c.,
whereas in the year 1972-73 the grain yield of variety 'Kalyan Sona' could be predicted jointly by the weight of grain, number of ear and ear length with the prediction power of 93.8 p.c. The cause and effect study on these characters clearly indicated that it was the number of ears per plant which was consistent positive and significantly correlated with the grain yield in both the years. Therefore, the number of ears might be considered as the most important predictor of yield in wheat.

The application of nutrients, particularly Nitrogen proved profitable. Among the different combinations, treatment NPK showed maximum profit. In fact the presence or absence of Nitrogen in various treatments decided the margin of profit.